

REMARKS

Applicants appreciate the indication in the Official Action of August 22, 2005 that Applicants' arguments with respect to the rejections of Claims 10, 12-19, 28 and 30-36 were deemed persuasive, and the withdrawal of those rejections. The August 22, 2005 Official Action, however, maintained the rejection of Claims 1, 3-9, 20, 22-27 and 37, and rejected Claims 10, 12-19, 28 and 30-36 on new grounds. Thus, all of the pending claims stand rejected. The claims stand rejected under 35 U.S.C. § 103 as obvious over U.S. Patent No. 6,018,275 to Perrett et al. ("Perrett"), in view of U.S. Patent No. 6,449,465 to Gailus et al. ("Gailus") and/or in view of U.S. Patent No. 6,671,337 to Cordoba ("Cordoba"). For the reasons discussed below, Applicants respectfully submit that the cited references do not render the pending claims obvious and, as such, the pending rejections should be withdrawn and the application passed to issuance.

I. Claims 1, 3-9, 20, 22-27 and 37 are Patentable Over the Combination of Perrett and Gailus

In the previous Official Action, Claims 1, 3-9, 20, 22-27 and 37 were rejected as being obvious over Perrett in view of Gailus. The current Official Action maintains those rejections. In Applicants' *Response* dated June 7, 2005, Applicants explained that the cited references, either alone or in combination, did not disclose or suggest a modulation system that includes **both** (1) "a modulator that modulates the in-phase and quadrature-phase signals" and (2) "an amplifier having a signal input, an amplitude control input and an output" as recited in independent Claims 1 and 37 (or the "corresponding" method recitations of independent Claim 20). The August 22, 2005 Official Action responded to Applicants' argument by taking the position that it would have been obvious to modify the system of FIG. 7 of Perrett to include the modulator of FIG. 4 of Perrett. (Official Action at 3). In support of this position, the Official Action points to the following statements from Perrett:

FIG. 7 illustrates a **transmitter** of another embodiment of the present invention, which is **capable of generating amplitude modulation, as well as phase or frequency modulation**. Such a transmitter may be used in a number of digital communication systems which use a combination of phase and amplitude modulation, so as to reduce the bandwidth of the transmitted signal.

An example of such a modulation scheme is $\pi/4$ quadrature phase shift keying (QPSK).

* * *

Similarly, a transmitter which is capable of generating amplitude modulation as well as phase or frequency modulation may be based on the embodiment shown in FIG. 4.

(Perrett at Col. 7, lines 21-28 and 46-50) (emphasis in original). Applicants' respectfully submit, for the reasons discussed herein, that neither of the above statements, nor anything else in Perrett discloses or suggests **both** (1) "a modulator that modulates the in-phase and quadrature-phase signals" and (2) "an amplifier having a signal input, an amplitude control input and an output" as recited in independent Claims 1 and 37 (or the "corresponding" method recitations of independent Claim 20).

The first of the above-quoted statements from Perrett states that FIG. 7 of Perrett discloses a modified transmitter that is capable of performing both amplitude and phase modulation. Perrett then explains that providing for both amplitude and phase modulation "involves decomposing the baseband signal into a complex signal and modulating it onto the carrier." (Perrett at Col. 7, lines 29-31). The next paragraph of Perrett goes on to explain that the embodiment of FIG. 7 is identical to the embodiment of FIG. 3, except that (1) a variable power amplifier is used and (2) that the baseband signal is decomposed into a complex signal having the R/Theta form so that a simple phase modulator may be used to modulate the phase component of the baseband signal, and the power amplifier is used to modulate the magnitude portion of the baseband signal. It is undisputed that the embodiment of FIG. 7 of Perrett does not disclose or suggest the present invention, either alone or in combination with Gailus.

The second of the above-quoted statements from Perrett states that the transmitter of FIG. 4 could – like the transmitter of FIG. 3 – be modified so as to be capable of generating amplitude modulation as well as phase modulation. The embodiment of FIG. 4 of Perrett is identical to the embodiment of FIG. 3 of Perrett, except that in the embodiment of FIG. 4 the modulator 39 is moved to be within the feedback loop of the phase locked loop. (Perrett at Col. 6, lines 2-8). Thus, the second of the above-quoted statements from Perrett (Col. 7, lines 46-50) merely states that the modulator in FIG. 7 could likewise be moved to be within the feedback loop. Thus, as with the embodiment

of FIG. 7, the alternative embodiment referred to at Col. 7, lines 46-50 of Perrett **uses a modulator that only modulates the phase part of the baseband signal $f_{bb}(\theta)$** , and applies the magnitude part of the baseband signal $f_{bb}(R)$ to a variable power amplifier. As such, this alternative embodiment does not disclose or suggest "a modulator that modulates the in-phase and quadrature-phase signals" as recited, for example, in independent Claim 1, and hence the argument raised in the August 22, 2005 Official Action fails to show that Perrett renders Claims 1, 3-9, 20, 22-27 and 37 obvious.

To fully understand the teachings of Perrett it is helpful to review the various embodiments disclosed in Perrett, and examine how they differ from each other. In FIGS. 3 and 4, Perrett discloses two transmitters that perform phase modulation on a baseband signal. In the embodiment of FIG. 3, the modulator is located outside the feedback loop, while in the embodiment of FIG. 4, the modulator is located inside the feedback loop. Neither embodiment discloses or suggests using "an amplifier having a signal input, an amplitude control input and an output." In addition to the embodiments of FIGS. 3 and 4, Perrett discloses or discusses several additional embodiments with respect to FIG. 7. In the first of these – namely the embodiment of FIG. 7 – Perrett discloses a transmitter in which the magnitude portion of a baseband signal is applied to a variable power amplifier in order to provide an embodiment that "is capable of generating amplitude modulation, as well as phase modulation." (See Perrett at Col. 7, lines 21-24). The embodiment of FIG. 7 clearly does not disclose "a modulator that modulates the in-phase and quadrature-phase signals" as recited, for example, in Claim 1, as only the phase portion of the baseband signal is applied to the modulator. (See Perrett at FIG. 7). Perrett further discloses an "alternative" embodiment of FIG. 7 at Col. 7, lines 41-46. In this alternative embodiment, Perrett discloses that the R/Theta modulation used in the embodiment of FIG. 7 – a modulation scheme that breaks the baseband signal down into its magnitude and phase components and modulates each separately – may be replaced with a conventional IQ modulator that modulates the complex baseband signal in its $+jb$ form onto the carrier to provide amplitude and phase modulation. This embodiment refers to the conventional transmitter discussed at page 1 and FIG. 1 of the present application, which does not include a variable power amplifier as the amplitude modulation is carried out by the conventional modulator. (See Perrett at Col. 7, lines 41-45). Accordingly, the

"alternative" embodiment of Perrett does not disclose "an amplifier having a signal input, an amplitude control input and an output." Finally, Perrett also states at Col. 7, lines 46-50, that the embodiment of FIG. 7 may be based on the embodiment of FIG. 4 (instead of the embodiment of FIG. 3). In this second alternative embodiment, the modulator of FIG. 7 is merely moved from outside the feedback loop to inside the feedback loop. Accordingly, the second alternative embodiment of FIG. 7 uses a modulator that only modulates the phase part of the baseband signal, and hence also fails to provide the necessary teachings to support a rejection of Claims 1, 3-9, 20, 22-27 and 37.

In another part of the pending rejections, the Official Action states that Perrett suggests that "figure 7 [of Perrett] can be modified to include a modulator as configured in claim [figure] 4." (See Office Action at 3, 5). However, such a modification to the embodiment of FIG. 7 of Perrett would not provide what the Official Action suggests. In particular, while the transmitter of FIG. 7 operates on a complex signal in the R/Theta form, the modulator of FIG. 4 operates on a non-complex baseband signal. Thus, if the modulator of FIG. 7 is replaced with the modulator of FIG. 4, as argued in the Office Action, the resulting transmitter would not include a modulator that modulates both an in-phase and a quadrature phase signal as recited in Claims 1, 3-9, 20, 22-27 and 37. Instead, such a revised version of FIG. 7 would have a modulator that operates directly on the baseband signal f_{bb} . (See Perrett at FIG. 4).

In effect, the Official Action takes the position that one of ordinary skill in the art would have combined bits and pieces of the various embodiments of Perrett to arrive at a transmitter that used an IQ modulator to modulate the baseband signal in $+jb$ form and that further used a variable amplifier to modulate the amplitude portion of an R/Theta version of the baseband signal. There is absolutely nothing in Perrett that teaches or suggests such an embodiment. While Perrett discloses multiple embodiments, what Perrett teaches is that the disclosed embodiments are separate ways of performing phase modulation (the embodiments of FIGS. 3 and 4) or both amplitude and phase modulation (the embodiment of FIG. 7 and the two alternative versions of that embodiment suggested in the text of Perrett). Nothing in Perrett suggests taking bits and pieces of separate embodiments and combining them together as suggested in the Official Action. In fact, the only suggestion for making these modifications is the teaching of the present specification – however, such

teachings cannot properly be relied on to support an obviousness rejection. Accordingly, for each of the above reasons, Applicants respectfully submit that Claims 1, 20 and 37, and the claims depending therefrom, are patentably distinct over the cited art.

II. Claims 10, 12-19, 28 and 30-36 are Patentable Over the Combination of Perrett and Cordoba

Independent Claims 10, 13-15 and 31-33 stand rejected under 35 U.S.C. § 103 as obvious over the combination of Perrett and Cordoba. Applicants note that the Official Action appears to include several typographical errors. In particular, in paragraph 4 of the Official Action Claims 12, 16 and 18-19 are rejected as obvious over Perrett and Gailus, while Claim 10 is rejected in paragraph 5 of the Official Action as obvious over Perrett and Cordoba. As Claims 12, 16 and 18-19 depend from Claim 10, Applicants assume that the rejection of Claims 12, 16 and 18-19 should have been included in the same paragraph of the Official Action as the rejection of Claim 10 (i.e., a rejection based on Perrett and Cordoba). Likewise, Claim 28 stands rejected under paragraph 4 of the Official Action as obvious over Perrett and Gailus. The Official Action states that Claim 28 is of similar scope to Claim 10, and hence is rejected based on the same rationale as Claim 10. Accordingly, Applicants assume that the intent was to include the rejection of Claim 28 in paragraph 5 of the Official Action as opposed to paragraph 4. Applicants likewise assume that the rejections of Claims 30 and 34-36, each of which depend from Claim 28, should also have been included in paragraph 5 of the Official Action. The discussion below assumes that Claims 10, 12-19, 28 and 30-36 all stand rejected based on the combination of Perrett and Cordoba.

Applicants have carefully reviewed the rejection of Claims 10, 12-19, 28 and 30-36 and believe that these rejections are not supportable for numerous reasons. While Applicants will not reiterate here all of the reasons, Applicants discuss below two independent reasons that compel the withdrawal of the rejections of Claims 10, 12-19, 28 and 30-36.

A. Cordoba Is Not Prior Art

As an initial matter, the rejections of Claims 10, 12-15, 28 and 30-36 should be withdrawn because Cordoba does not qualify as prior art to the present application. In

particular, Cordoba was filed on October 25, 2000. The present application was filed on December 22, 2000. Thus, Cordoba only potentially qualifies as prior art to the present application under 35 U.S.C. § 102(e). However, as shown by the attached *Declaration of Scott Justice Pursuant to 37 C.F.R. § 1.131*, Cordoba does not qualify as prior art to the present application under 35 U.S.C. § 102(e). Accordingly, based on the showing in the attached Declaration, Applicants respectfully request withdrawal of the pending rejections.

B. The Official Action Fails to Identify Anything That Teaches or Suggests the Phase Tracking Subsystem of Claim 10

In rejecting Claim 10, the Official Action concedes that Perrett does not expressly teach the specific phase tracking subsystem recited in Claim 10. (Official Action at 12). In an effort to overcome this problem, the Official Action states:

[T]he PLL 30 [of Perrett that is] responsive to the modulator 39 produces a phase signal that is responsive [to] the phase changes in the modulated signal. **Because the PLL 30 performs [the] function of the phase tracking subsystem as specified in the claim, a person of ordinary skill in the art would have recognized the interchangeability of the PLL 30 as taught by Perrett et al. for the corresponding phase tracking subsystem as specified in the claim.** Furthermore, the modulator 39 provides phase modulation to the PLL 30, therefore the generated phase signal is independent of the amplitude changes in the modulated signal.

(Official Action at 12) (emphasis added). Applicants respectfully submit that the above argument does not support the pending rejection under 35 U.S.C. § 103.

As an initial matter, the Official Action fails to identify anything in the prior art that teaches or suggests providing a phase tracking subsystem that produces a phase signal that is responsive to changes in the modulated signal and that is independent of amplitude changes in the modulated signal. In order to support a rejection under Section 103, it is first necessary to show that each of the recitations of the claimed subject matter was taught or suggested by the prior art. Here, the pending rejection wholly fails to do this. For this reason alone, the rejection of Claim 10 must be withdrawn.

The Official Action attempts to compensate for the lack of any teaching in the cited art of the claimed phase tracking subsystem by arguing that since the PLL of FIG. 4 of Perrett allegedly performs the same function as the phase tracking subsystem of Claim 10, one of ordinary skill in the art would have found it obvious to modify the PLL of

Perrett to use the claimed phase tracking subsystem. However, showing alleged correspondence between the "functions" of a prior art system and a claimed system is not a proper part of the obvious analysis – instead, the burden is on the examiner to show that the system was disclosed or suggested in the art and that one of ordinary skill in the art would have been motivated to combine the cited references to arrive at the claimed invention. Here, in essence, the rejection uses Applicants' own disclosure as prior art and then argues that because Applicants' phase tracking subsystem allegedly performs the same function as the PLL of Perrett, it would have been obvious to use Applicants' system. However, Applicants' disclosure of their invention in the specification of their patent cannot be used to support an obviousness rejection.

Applicants' also note that the alleged correspondence between the function of the PLL of Perrett and the phase tracking subsystem of Claim 10 cannot, as a matter of common sense, tell us anything about whether or not Applicants' phase tracking subsystem is patentable. A function of a bow and arrow – which has existed for thousands of years – is to kill animals. A rifle has the same function. Under the reasoning applied in the rejection of Claim 10, the first rifle would have been unpatentable under Section 103 because it had the same function as the pre-existing bow and arrow. This example serves to highlight the problems with the pending rejection of Claim 10.

Claims 28 and 31-33 (and the claims depending therefrom) are rejected based, in part, on the rationale used to reject Claim 10. Accordingly, the rejections of Claims 10, 12-19, 28 and 30-36 should be withdrawn for this additional reason.

III. New Claim 38 is Patentable Over the Cited Art


Applicants have added new Claim 38. Applicants respectfully submit that the subject matter of Claim 38 is not disclosed or suggested by the cited prior art.

In re: Erik Bengtsson et al.
Serial No. 09/746,823
Filed: December 22, 2000
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IV. Conclusion

Applicants submit that the present application is in condition for allowance and the same is earnestly solicited.

Respectfully submitted,



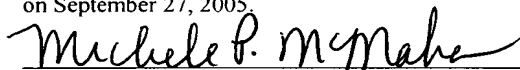
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